Analyze • Detect • Measure • Control™

**Controlled Environment
Equipment Solutions
for the Lab**
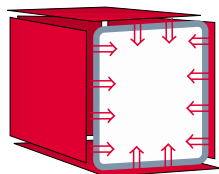
Steri-Cycle® CO$_2$ Incubators

Thermo
ELECTRON CORPORATION

Contamination Control

Premium CO$_2$ Incubator with Contamination Control <u>and</u> Elimination

Our reliable Steri-Cycle CO$_2$ Incubator combines the best of both worlds—a unique HEPA filtration system for continuous cleaning and a validatable high heat cycle for periodic sterilization. In addition, precise CO$_2$ control, elevated RH, and a choice of T/C (thermal conductivity) or IR (infrared) sensor make this direct heat style incubator an ideal choice for researchers in academic, government, clinical, biotech, and R&D labs.

Total contamination control and elimination for ideal culturing. We minimize the risk of product loss, downtime, and wasted time and money due to airborne contamination. Design features, such as 100% coved corners and easily removed shelving, ensure easy cleaning. Carefully directed airflow promotes uniformity, keeping cells at their optimum growth temperature. Validatable 100% HEPA filtration provides Rapid Response Class 100 air quality.* The optional built-in HEPA^2® VOC Filtration System removes potentially toxic volatile compounds often found in lab settings. An easy-to-use, safe, and effective heat sterilization system destroys all mycoplasma, fungi, molds, yeast, bacteria, and even hard-to-kill spores inside the chamber.*

High capacity for maximum culture space. The incubator's chamber provides 6.5 cu. ft. (184.1 liters) of culturing space for your sensitive cells, and heavy-duty stainless steel shelves support a full product load. Heating elements and insulation around all sides of the outer wall ensure uniform heating and fast recovery after door openings, increasing performance and reducing stress on your cultures.

Easy to configure and use. Setup is simple. Incubator design enhances usability. Microprocessor controls are powerful, intuitive, and common to Thermo Electron Corporation's other controlled environment equipment. Filters are easy to access. An array of accessories is available (e.g., gas guard, roller dolly, copper components) so you can tailor each incubator to your specific needs.

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SPACE SAVING CONFIGURATIONS

- Roomy 6.5 cu. ft. single chamber

- Two stacked chambers (stacking hardware included with each)

- Side-by-side

- Field reversible door swing (left hand door swing is standard, as shown)

U.S. Patents 5,792,427 and 6,117,687
*Test results and testing protocol are available upon request.

Total Contamination Control

Multiple methods of contamination control make the Steri-Cycle CO_2 Incubator ideal for your critical cultures. Special design features make it easy to keep the unit clean. 100% HEPA filtration quickly achieves Class 100 air quality. An optional built-in VOC filtration system removes volatile organic compounds (vapors). And a high heat sterilization system destroys all mycoplasma, fungi, molds, yeast, bacteria, and even hard-to-kill spores.
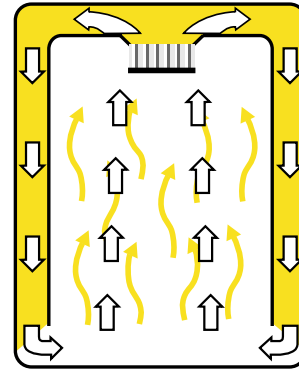
Designed for Easy Cleaning

- Polished stainless steel interior with 100% coved corners is easy to clean, **saving time and reducing contamination risk.**

- HEPA filter is located inside the incubator chamber for **optimum filtering, easy access, and simple replacement** (no tools needed). Built-in preventive maintenance system with adjustable timeframe notifies you when it's time to replace the filter.

- Disposable snap-fit blower/scroll mounting can be **removed easily without tools** for cleaning or replacement.

- Patented inner door gasket is **removable and cleanable**, and adjusts continually to ensure a tight seal.

- Sturdy stainless steel shelves and supports can be removed without tools for **easy cleaning or adjustment.**

- Microbiological filters on gas inlet and sample port **reduce the risk of contamination.**

Rapid Response Class 100

Product yields and reliability can be affected by airborne contamination, costing you time and money. Class 100 air quality contributes to an **ideal culturing environment.**

Steri-Cycle features validatable Class 100 air quality. Particulates are reduced to cleanroom levels, minimizing the risk of product loss and downtime.
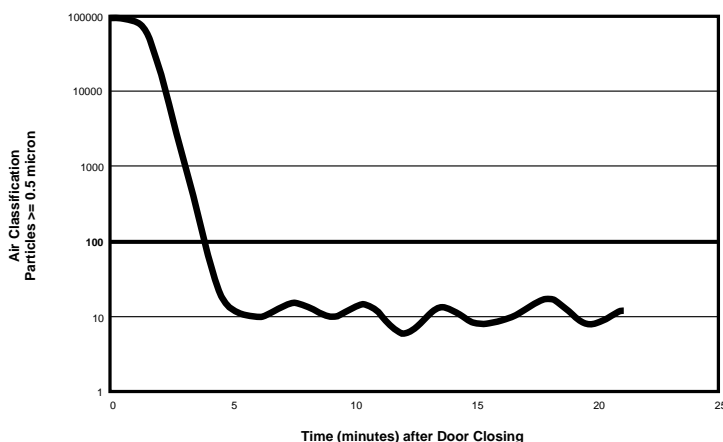
The patented HEPA Filter Airflow System

- continuously filters the entire chamber volume every minute to provide an **aseptic culturing atmosphere**

- **filters out primary sources of contamination** (airborne biological particulates) found in most lab settings

- **does not interfere** with your product or the incubator's functioning

- ensures that **Class 100 air quality is achieved within five minutes of the door closing**; slower filtering systems don't provide added protection, they give contaminants an opportunity to take hold

HEPA CLASS 100

The HEPA filter **entraps particulate air contaminants and prevents their escape**. Filter efficiency increases as particulates and micro-organisms are entrapped.

Efficiency and long-term effectiveness of the HEPA Filter Airflow System **minimize the need to remove your product for frequent, lengthy decontamination cycles**. **Incubator down time is diminished.**

Air Classification Particles >= 0.5 micron
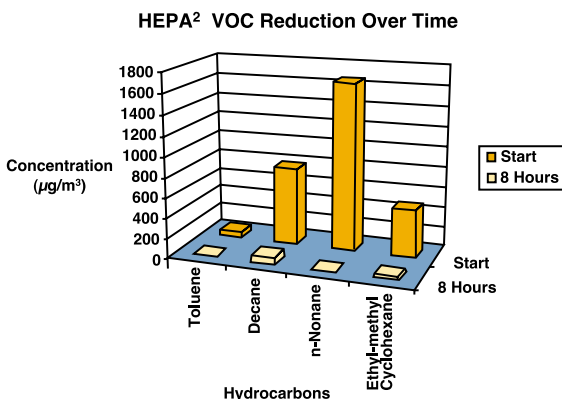
Time (minutes) after Door Closing

AIR QUALITY DEFINED

Federal Standard 209E and International Standard ISO 14644-1 define air quality classifications (e.g., Class 1, 10, 100 and ISO Class 1, 2, etc.).

The Federal class number is the maximum allowable number of particles 0.5 microns and larger per cubic foot of air. ISO Class 2 correlates most closely to Federal Standard Class 100.

Cost-Effective HEPA[2] VOC Filtration

Our optional HEPA[2] VOC Filtration System (patent pending) helps improve the viability and growth of sensitive cell lines or types by **reducing levels of airborne particulates, biological contaminants, and volatile organic compounds (VOCs)**. The HEPA[2] filter (No. 760199) complements our proven Class 100 HEPA airflow technology.

The HEPA[2] filter's molecular sieve media captures vapors of potentially toxic chemicals commonly used in products such as lab solvents, cleaning agents, plastics, and personal care products.

HEPA² VOC Reduction Over Time

Examples of chemicals/vapors filtered include alcohols (ethanol and methanol), alkanes (decanes, heptanes, hexanes), aromatics (toluene, xylene, benzene, styrene), and olefins (cyclohexane).

This **easy-to-install, low maintenance** filtration system is **more efficient and longer lasting than activated charcoal systems in high humidity conditions**, such as in a CO_2 incubator.

> **Want to learn more?** Request the following white papers, or visit www.thermo.com.
>
> • *Importance of Class 100 Air in a CO_2 Incubator*
> • *Effective Heat Sterilization in CO_2 Incubators*
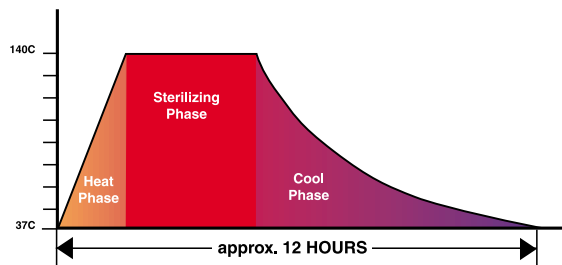
On-Demand Sterilization Cycle

Steri-Cycle includes an automatic process for **eliminating all contamination** should your incubator become contaminated. The carefully designed and tested sterilization cycle combines an optimum temperature and process while minimizing cycle time and heat stress on the incubator, **saving time and wear-and-tear on the incubator.**

Easy to Use

• Heat-resistant T/C sensor can be left in place during the cycle for convenience. **HEPA filter and IR sensor are easy to remove** before running the cycle.

Fast

• Limited downtime (approximately 12 hours) allows **convenient overnight sterilization.**

• Post-cycle cleanup is not required, **saving time.** The incubator returns to your regular operating conditions at the end of the cycle.

Safe

• Audible alarm activates immediately if the outer door is opened during the sterilization cycle and the temperature is 60C (140F) or greater, **ensuring safety in the lab.**

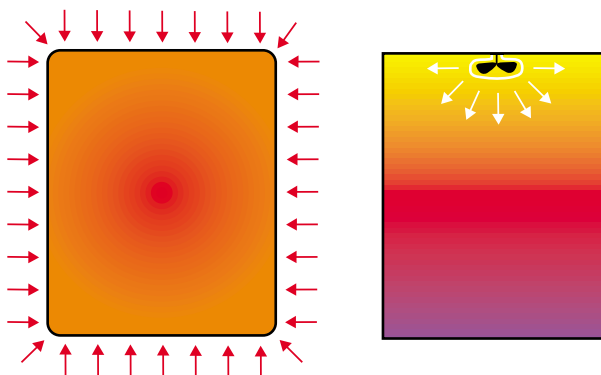• Access code **prevents accidental initiation of the cycle or changes to the operating parameters.**

Effective

Unlike UV decontamination systems and other disinfection processes, heat sterilization **destroys all forms of microbial life.**

HIGH TEMPERATURE UNIFORMITY

Temperature uniformity contributes to an ideal culturing environment. Steri-Cycle's directed airflow and direct chamber heating create optimum uniformity.

During the sterilization cycle, that same system ensures that your incubator's entire chamber is sterilized—all contamination is eliminated.

Uniform direct heat Steri-Cycle chamber (left) versus a competitor's incubator with single-point cycle heating (right)
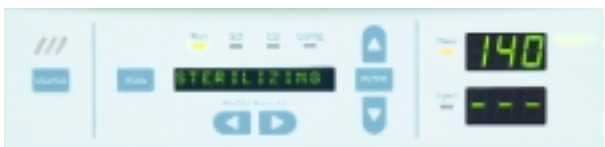
The Cycle Starts with the Press of a Button!

During the heat sterilization process, the Microprocessor Control/Monitoring System's message center guides you through the cycle with start-up and cycle status messages. The three sterilization cycle phases are heat, sterilizing (hold), and cool.

Press and hold the green button to begin the heat sterilization process.

Sterilizing...Heat Phase – Incubator is ramping to the heat sterilization temperature

Sterilizing – Chamber has reached the sterilization temperature and all microbial life is destroyed

Sterilizing...Cool Phase – Incubator is cooling to normal operating temperature; you are then prompted to replace the HEPA filter and sensor, if applicable

High Capacity Culturing, Easy to Configure and Use

Quality construction. Roomy 6.5 cu. ft. (184.1 liters) interior volume. Heavy-duty stainless steel shelves support a full product load. Reliable performance. Intuitive controls. Remote alarm contacts and optional data outputs for monitoring and meeting regulatory requirements. A wide range of accessories. The Steri-Cycle CO_2 Incubator is designed for ease of use and long life.

Setpoint – Set Temp, Overtemp, CO_2

Calibration – Calibrate Temp, CO_2, RH (optional)

System Configuration – Configure Audible On/Off, Access Code, HEPA Filter Change Reminder, Remote Alarm Contacts, Tracking Low Temp and High and Low CO_2 Alarms, and the following options: Automatic Tank Selector, RS-485 Interface, and Display Temp/RH (selectable)

Run – CLASS 100 timing reminder appears after door is closed for five minutes, message changes to describe alarm conditions

Heater On Indicator

Temperature Display

Audible/Visual Alarm

Alarm Silence

Optional Built-In Gas Guard System

RH Display

Mode Select

Scroll for Program Parameters

Programming Buttons

CO_2 Inject Indicator

CO_2 Display

Specifications

Temperature
Control . . . . ±0.1C
Range. . . . . 5C above ambient
to 50C (122F)
Uniformity . . . . ±0.3C @ 37C (98.6F)
Tracking Alarm . . . . User-programmable low

Overtemperature
Sensor . . . . Precision thermistor
Setability 0.1C
Function . . . . Shuts off heat

Temperature Safety
Sensor . . . . Independent thermostat
Controller . . . . Independent analog
electronic

Sterilization Cycle
Sensor . . . . Precision thermistor
Cycle Temperature 140C (284F)
Cycle Length . . . . Under 12 hours

CO₂
Control . . . . Better than ±0.1%
Range. 0-20%
Inlet Pressure . . . . 15 PSIG (1.0 bar)
Sensor . . . . T/C or IR
Readability & Setability . . 0.1%
Tracking Alarm . . . . User-programmable high/low

Humidity
RH . . . . Ambient to 95% @ 37C
(98.6F)
Humidity Pan . . . . 3.2 qt. (3.0 liters) standard
Display (opt.) . . . . In 1% increments

Fittings
Access Port . . . . 1.3" (3.3cm) with removable
silicone plug with filter
CO₂ Inlet. . . . . 1/4" hose (barbed)

Unit Heat Load
115V/230V . . . . 293 BTUH (86 Watts)

Shelves
Dimensions . . . . 18.5" x 18.5"
(47.0cm x 47.0cm)
Construction. . . . . Stainless steel, perforated
Surface Area. . . . . 2.4 sq. ft. (0.2 sq. m)
Max. per Chamber . . . . 36.0 sq. ft. (3.3 sq. m)
Standard, Maximum . . . 4, 15

Construction
Interior Volume . . . . 6.5 cu. ft. (184.1 liters)
Interior . . . . Type 304, polished
stainless steel
Exterior. . . . . 18 gauge, cold-rolled
steel, powder coated
Outer Door Gasket . . . . Four-sided, molded,
magnetic vinyl
Inner Door Gasket . . . . Removable, cleanable,
feather-edged, silicone

Electrical
370/380 . . . . 115V, 50/60 Hz, 9.6 FLA
(Operating range 90-125V)
371/381 . . . . 230V, 50/60 Hz, 4.4 FLA
(Operating range 180-250V)
Circuit Breaker/. . . . . . . 12 Amps/2 Pole
Power Switch
Convenience. . . . . 75 Watts maximum
Receptacle (matches cabinet voltage)
Plug . . . . 115V: NEMA 5-15P Plug
230V: CEE 7/7 Plug
Alarm Contacts. . . . . . . Power interruption;
deviation of temp, CO₂,
RH; customer connections
through jack on back of unit
Data Outputs (opt.) RS-485, 0-1V, 0-5V, 4-20
milliamp (select one)

Dimensions
Exterior. . . . . 26.3"W x 39.5"H x 25.0"F-B
(66.8cm x 100.3cm x 63.5cm)
Interior . . . . 21.3"W x 26.8"H x 20.0"F-B
(54.1cm x 68.1cm x 50.8cm)

Weight
Net. . . . . 260 lbs. (117.9 kg)
Shipping (Motor). . . . . . 315 lbs. (142.9 kg)

All units are UL Listed to United States and Canadian requirements and bear the CE Mark.

Model	CO₂	Voltage
370	T/C	115
371	T/C	230
380	IR	115
381	IR	230

Choice of T/C or IR Sensor

Select a T/C sensor when chamber temp and RH are relatively constant. Typically, a T/C sensor has a longer life than an IR sensor.

Select an IR sensor when temp and RH levels are changed frequently.

With either sensor, elevated RH is critical to prevent desiccation.

Accessories

Accessories are **customer installed unless indicated otherwise**. In addition to providing a standard line of equipment and accessories, we will manufacture custom accessories to meet your specific requirements. Contact us for details.

RH Display

Stock No.	Description
1900091	Humidity (RH) Display, readable in 1% increments, includes low RH programmable alarm (alerts you of need to add water to humidity pan), factory installed

Shelving, Ductwork, and Humidity Pans

Stock No.	Description
	Stainless Steel Components –
190884	Stainless Steel Shelf and Channels
237016	Stainless Steel Humidity Pan
190670	Stainless Steel Ductwork Kit, includes side ducts and shelf channels
	Solid Copper Components –
1900095	Copper Interior Components Kit; includes side ducts, shelf channels, four shelves, and humidity pan; factory installed at time of order
190879	Copper Perforated Shelf with Channels
237020	Copper Humidity Pan

Filters* and Filter Kits

Stock No.	Description
760175	Replacement HEPA Filter
760209	HEPA Value Pack (four filters)
760210	10 Disposable Polypropylene In-Line Filters
1900067	HEPA Filter Replacement Kit, includes HEPA, in-line, and access port filters
760200	Replacement HEPA^2 VOC Filter
1900094	HEPA^2 VOC Filter Replacement Kit, includes HEPA^2, in-line and access port filters
760199	HEPA^2 VOC Filtration System (kit), converts HEPA Filter Airflow System to HEPA^2 Filtration System, includes HEPA^2 filter and two silicone plugs

Door Kit and Right Hand Door Swing

Stock No.	Description
190650	Independent Inner Glass Door Kit (eight glass doors with latches), mounts inside heated inner glass door, is removable and can be autoclaved
190666	Right Hand Door Swing, factory installed at time of order

CO$_2$ Accessories

Stock No.	Description
1900086	Built-In CO$_2$ Gas Guard, monitors CO$_2$ and automatically switches from one cylinder to the other when the supply is exhausted, factory installed
950316	Wall Clamp for a CO$_2$ Bottle, includes cylinder holder with web strap
965010	Two-Stage CO$_2$ Gas Regulator with barbed connection and shut off valve
155021	CO$_2$ Fyrite® Analyzer Kit, 0-20%

Roller Dolly

Stock No.	Description
1900063	Roller Dolly (heavy-duty, powder coated steel base) with dual-wheel, swivel locking casters and leveling feet; supports one or two (stacked) incubators; raises unit 3.0" (7.6cm) off the floor

Data Outputs (select one), factory installed

Stock No.	Description
1900085	RS-485 interface
190512	4-20 milliamp
190543	0-5V analog
190544	0-1V analog

(continued)

*HEPA and HEPA^2 filters are rated a minimum 99.97% efficient at 0.3 microns. Filters are easily replaced without tools.

Monitoring and Alarm Systems

Stock No.	Description
1535	Monitor/Alarm System, interfaces with as many as 24 products (channels) to monitor and display equipment conditions up to 2,000 ft. away

Sensaphone® Telephone Dialing Systems, interface with standard touch-tone phone system –

400047	For up to four input channels
400134	For up to eight input channels

Dataloggers, -50C to 140C (-58F to 284F), designed to meet U.S. FDA guidelines cGLP 21 CFR Part 58, Software Validation 21 CFR Part 820, and Electronic Records 21 CFR Part 11; contact our Services Department (888-213-1790) for an implementation quotation –

201904	Datalogger, without evaluation software
201266	Datalogger, with evaluation software and PC data cable, factory installed

6", 7 Day Circular Chart Recorders –

201188	0C to 200C (32F to 392F), single pen, 120V
201189	0C to 200C (32F to 392F), single pen, 220V
201194	0C to 200C (32F to 392F), dual pen, 120V, 2 probes, temp/temp (for stacked incubators)
201195	0C to 200C (32F to 392F), dual pen, 220V, 2 probes, temp/temp (for stacked incubators)
201159	0C to 60C (32F to 140F), dual pen, 120V, 1 probe, temp/RH
201160	0C to 60C (32F to 140F), dual pen, 220V, 1 probe, temp/RH

Miscellaneous Accessories

190043	Sealed Modular Incubator Chamber, purge with any gas mixture to create a "mini-incubator" inside your incubator for unusual gas and temperature controlled experiments, dimensions: 12.0" (30.5cm) circular chamber, 4.7" (11.9cm) high, must remove before sterilization cycle is run

6000370	IQ/OQ, MS Windows®-compatible document disk for process customization and detailed checklists to qualify unit setup and operation

Warranty

Steri-Cycle CO_2 Incubators are backed by a full one year parts and labor warranty. The T/C CO_2 sensor is covered by a five year warranty. The IR CO_2 sensor is covered by a two year warranty.

Interested in maximum thermal protection, larger 8.2 and 11.4 cu. ft. capacities, or an external humidification system?

Ask about our Series II Water Jacketed and Steri-Cult® CO_2 Incubators!

About Thermo

A world leader in high-tech instruments, Thermo Electron Corporation helps life science, laboratory, and industrial customers advance scientific knowledge, enable drug discovery, improve manufacturing processes, and protect people and the environment with instruments, scientific equipment, and integrated software solutions.

Based in Waltham, Massachusetts, Thermo Electron has revenues of more than $2 billion, and employs approximately 11,000 people in 30 countries worldwide. For more information, visit www.thermo.com.

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